AMENDMENTS TO INSTRUCTION BOOK

for

TYPE R-127
RADIO RECEIVING CONTROL
CONVERTING RECEIVER

to

TYPE R-127A
RADIO RECEIVING CONTROL

MODIFIED BY

THE AERO-RAD CORPORATION

YOUNGSTOWN, OHIO

U. S. COAST GUARD

CONTRACT NO. TCG-37284 ORDER NO. CG-5488-C

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PARAGRAPH (1) COMPONENT UNITS

Insert the following after "Output Plug" in the table under "Quantity":
"1—External Power Socket, Aero-Rad Dwg. No. B4634".

Change "3-1T4 R.F. and I.F. Amplifiers" in the table to read:
"2—1T4 I.F. Amplifiers".

Delete "2-1R5 Oscillator and 1st Detector" in the table and add the following:
"2—959, R.F. Amplifier and Modulator".
"1—958-A Oscillator".

WARNING: Before the vacuum tubes, 959 or 958-A, are installed into the high frequency sub-chassis, consult Fig. 5A, 6A, 10A, 13A, and 14A for the proper placement in the tube socket.

SUB-PARAGRAPH (2.2) FREQUENCY RANGE

Change paragraph to read:
"162 mc.—174 mc.".

SUB-PARAGRAPH (2.4) TUNING CONTROLS

Change paragraph to read:
"There are five separate tuning controls, namely, Antenna Input, Antenna Output, R.F. Amplifier, Modulator, and Oscillator".

SUB-PARAGRAPH (2.7) TYPE OF SIGNAL FOR OPERATION

Change "between 72 and 78 mc." in the second line of the paragraph to read:
"between 162 and 174 mc.".

SUB-PARAGRAPH (2.11) POWER REQUIREMENTS

Change filament current from "0.5 amperes" to "0.56 amperes".

Change plate circuit values to read:
"90 volts at .022 ampere, and 67½ volts at .0043 ampere".

Change bias current from "no current" to "1 microampere".

SUB-PARAGRAPH (2.12) SENSITIVITY

Change "50 ohm resistor" to "35 ohm resistor" in first paragraph.

Delete first sentence of second paragraph and insert:
"An average of 15 microvolts is required, modulated 30% at the proper sub-carrier and pulse frequency, to operate the torsional relays when the battery is new".

PARAGRAPH (3) ANTENNA REQUIREMENTS

Change "33 inches" in first sentence of the paragraph to:
"13.5 inches".

Change second sentence of paragraph to read:
"Antenna Drawing is Aero-Rad No. A4624".

PARAGRAPH (4) POWER SUPPLY

Delete the last sentence of this paragraph.

SUB-PARAGRAPH (5.1) RECEIVER

Change sentence to read:

"All parts are clearly shown in Figs. 2A, 4A, 5A, 6A, and 11A".

PARAGRAPH (5.1b) ARRANGEMENT OF PARTS

Delete the paragraph in full and substitute the following:

"The receiver is assembled into a **MAIN** chassis and a **HIGH FREQUENCY** sub-chassis. The main chassis mounts the second detector, I.F., and output tubes, I.F. transformers, sub-carrier filters, power input plug, and the high frequency sub-chassis. The high frequency sub-chassis mounts the antenna matching and signal image rejection network, R.F. amplifier, modulator, and oscillator tubes with their associated R.F. coils and tuning controls".

SUB-PARAGRAPH (5.1c) TUNING CONDENSERS

Delete the paragraph in full and substitute the following:

"All tuning condensers are of the ceramic trimmer type for maximum stability".

SUB-PARAGRAPH (5.1d) RADIO FREQUENCY COILS

Delete the paragraph in full and substitute the following:

"All R.F. tank coils in the high frequency sub-chassis are of the air dielectric type and have temperature compensating condensers to maintain the circuit frequency setting with a variation in ambient temperature".

SUB-PARAGRAPH (5.1f) TUBE GUIDES

Delete the paragraph in full and substitute the following:

"All tubes mounted on the main chassis have a tube guide in the form of a chimney to prevent rocking a tube while inserting it in its socket or removing it, as such a motion is apt to crack the seal at the base of the tube".

SUB-PARAGRAPH (5.1g) ELECTRICAL CONNECTION TO THE RECEIVER

Delete the second sentence and substitute the following:

"The antenna connection is made by means of a phone tip, P6, which plugs into a jack, J10, on the top of the H.F. sub-chassis end plate".

SUB-PARAGRAPH (5.1h) REMOVAL OF RECEIVER

Change "P1" of the second line of the first sentence to "P6".

SUB-PARAGRAPH (5.4) ANTENNA

Change "33 inches" in first sentence to "13.5" inches".

INSERT NEW SUB-PARAGRAPH (5.8)

5.8 EXTERNAL POWER SOCKET AND COVER

The power socket is located on the left side of cabinet, adjacent to and opening into the battery compartment. The power socket shell is made of cadmium plated bronze with a double octal insert and constructed in accordance with Aero-Rad Drawing No. B-4634. An external captive cover is provided to make the socket water tight when not in use.

SUB-PARAGRAPH (6.3) ANTENNA CONNECTION

Change the second sentence of the paragraph to read:

"The Antenna is shown mounted in position in Figs. 8A and 11A".

INSERT NEW SUB PARAGRAPH (6.4)

6.4 EXTERNAL POWER CONNECTION

Connections are made to an external source of power, when the internal battery block is not used, by inserting the battery cable octal plug, P5, into the socket, J12, inside the cabinet, and a second octal plug inserted into the socket, J12, on the outside of the cabinet for connection to an external power supply. See Fig. 9A for external power socket connection.

SUB-PARAGRAPH (7.1) TYPE OF WIRE

Delete the paragraph in full and substitute the following:

"All wiring is cabled wherever possible. Each conductor in the main chassis consists of 10 strands of #30 tinned copper wire covered by a layer of vinylite and a double cotton lacquered braid. Each conductor in the H.F. sub-chassis consists of #20 stranded tinned copper wire covered by a glass braid".

SUB-PARAGRAPH (7.3) COLOR CODING

Change the sentence to read:

"All wire colors are shown in the wiring assemblies in Figs. 10A and 11".

PARAGRAPH (8) THEORY OF OPERATION

Change the sentence to read:

"Symbol numbers refer to the schematic diagram Fig. 9A".

SUB-PARAGRAPH (8.1) ANTENNA CIRCUIT AND R.F. AMPLIFIER

Delete the paragraph and paragraph title in full and substitute the following:

8.1 ANTENNA MATCHING NETWORK AND R.F. AMPLIFIER

The antenna is connected across the input of the matching network, which consists of L6 and C28 connected in series. The output voltage of the network obtained across the series combination of C29 and L7 is connected to a tap on the R.F. amplifier coil L8. By the proper adjustment of condensers C28 and C29, the signal image response is reduced 50 d.b. or more and the optimum voltage gain is obtained between the antenna and the grid of the R.F. amplifier tube V9. Condenser C31 tunes coil L8 to the signal frequency. Condenser C32 is in parallel with coil L8 for padding and also serves to compensate for variations in tuned circuit frequency due to ambient temperature change. Bias for tube V9 is supplied from a dividing network of resistors R19 and R20, connected to the AVC voltage line. Voltage to the plate of V9 is supplied through an R.F. choke L11 from the 90 volt battery. Voltage to the screen is supplied through resistor R21 from the 67½ volt battery. Condenser C33 in the grid circuit, C34 and C35 in the filament circuit, and C36 in the screen circuit serve as R.F. by-passes to ground.

SUB-PARAGRAPH (8.2) THE MODULATOR CIRCUIT

Delete the paragraph in full and substitute the following:

"Condenser C37 serves to couple the R.F. signal from the R.F. stage to the modulator stage. The R.F. coil L9 is tuned by the variable condenser C38 while condenser C39 is connected in parallel with R.F. coil L9 for padding and also serves to compensate for variations in tuned circuit frequency due to ambient temperature change. Voltage developed across the coil L9 is applied to the grid of the modulator tube V10.

"Bias for V10 is supplied through resistor R22 from the mid-point of voltage dividing resistors R23 and R24 connected across the minus 10.5 volt battery supply. Screen voltage is obtained through resistor R25 from the 67½ volt battery. The primary of the I.F. transformer T1 is connected in the plate circuit of the tube V10. Plate voltage for V10 is supplied from the 90 volt battery through resistor R17 and the primary winding of T1. Condenser C14 is an R.F. by-pass around resistor R17. Condensor C40 in grid circuit C41 in

screen circuit, and C42 and C43 in filament circuit serve as R.F. by-passes to ground. Oscillator voltage is introduced through C44 to a tap on coil L9. A beat frequency of 8.25 mc. is produced in the plate circuit of V10 by virtue of the modulation of the tube electron stream by the signal and oscillator voltages impressed upon the grid of the tube. The beat frequency generated is the I.F. frequency and is transferred to the 1st I.F. stage through transformer T1."

SUB-PARAGRAPH (8.3) OSCILLATOR

Delete the paragraph in full and substitute the following:

"The oscillator tube V11 is connected to a tuned circuit consisting of R.F. coil L10 tuned by condenser C45. Condenser C46 is connected in parallel with L10 for padding and also serves to compensate for variations in tuned circuit frequency due to ambient temperature change. Bias for the oscillator tube is developed by the grid current through resistor R27. Condenser C47 couples the grid to the oscillator coil and isolates the D.C. voltage across R27 from the coil L10. Condenser C44 couples the oscillator voltage to a tap on the modulator R.F. coil L9. Plate voltage is supplied through the resistor R26 from the 90 volt battery. R.F. coils L12 and L13 are reactors to isolate radio frequency current from the D.C. plate and grid circuits respectively. Condensers C48, C49, C50, and C51 are R.F. by-passes. The frequency range of the oscillator is from 153.75 mc. to 165.75 mc. and is always tuned lower than the signal frequency by 8.25 mc.".

SUB-PARAGRAPH (9.1) TUNING ADJUSTMENT

Delete the sub-paragraph in full and substitute the following:

"Note: Use the fibre screw driver mounted on chassis front when adjusting the tuning controls of the high frequency sub-chassis.

For proper operation the receiver should be tuned to the desired R.F. frequency before being placed in operation in the field. This tuning should be done by using a Ferris 18-D signal generator or equal, and the type MM167 test meter. The test meter should be connected into the jack on receiver marked "Test".

Connect the signal generator to the antenna mounting stud through a 35 ohm non-inductive resistor. Connect the ground lead of the generator to the cabinet; the top draw-bolt is satisfactory for this connection. The battery switch should be turned on.

Note: Before adjusting the controls of the H.F. sub-chassis the I. F. tuning procedure as set forth in sub-paragraph 10.2 should be followed if factory I.F. adjustment has been disturbed.

For aligning the controls of the H.F. sub-chassis the following procedure should be followed:

1. **Adjust signal generator to the desired carrier frequency within the range of 162 to 174 mc. Modulate the generator 30 to 50% at the sub-carrier frequency #1.**

   The signal generator output voltage should be adjusted to values which will prevent the test meter indication from reading over 3 volts in carrying out the following steps of adjustment. However, in step 4 adjustment, sufficient generator output voltage should be used in order to permit locating the signal as the oscillator control is varied.

2. **Adjust the INPUT and OUTPUT controls of the antenna matching network to maximum capacity.**

   Maximum capacity will be obtained when the RED DOT on the screw driver slot of the control is turned until it is in the position nearest the top of the sub-chassis shield can.

3. **Adjust the oscillator, modulator and R.F. controls to some position within the 162 to 174 mc. BLACK BAND limit marks on the chassis cover.**

   The RED DOT on the oscillator, the BLUE DOT on the R.F., and the

BLUE DOT on the modulator control screw driver slots, serve as position indicators. The indicators must be turned so as to be adjacent to, and within the range set by the BLACK DOTS at the edge of the tuning access holes in the shield cover.

4. **Adjust the oscillator control until a maximum reading is indicated on the test meter. Care must be taken not to exceed 3 volts on the meter.**

   The oscillator control is not at ground potential, so it is necessary to carry the adjustment slightly beyond the maximum reading before removing the screw driver.

5. **Adjust the R.F. control** until the test meter indicates maximum output. Control the signal generator output so as to keep the test meter indicaton less than 3 volts.
6. **Adjust the modulator control** until the test meter indicates maximum output. Control the signal generator output so as to keep the test meter indication less than 3 volts.
7. **Adjust the antenna output control** in a clockwise direction from maximum capacity until the test meter reading drops to zero and increases very slightly with further turning of the control in a clockwise direction.
8. **Adjust the antenna input control** in a clockwise direction from maximum capacity until the test meter reading increases to a maximum indicaton.
9. Trim all controls with the exception of the R.F. for maximum output if it is necessary. With new batteries, a reading of 1.5 volts by the test meter should be obtained with an R.F. signal of 4 to 20 microvolts.

After aligning as set forth above, the signal image response which is below the signal frequency by 16.5 mc. should be reduced at least 50 d.b. below the response of the desired signal. If a greater reduction is necessary, the signal generator should be set to the image frequency and the ANTENNA INPUT CONTROL adjusted slightly to reduce the test meter reading to a minimum. Reset the signal generator to the desired signal and adjust, if necessary, the ANTENNA OUTPUT CONTROL for the maximum indication of the test meter.

If a type MM167 test meter is not available, a 0 to 5 ma. D.C. meter can be connected across the coil of relay "X" or "Y" and used as an indicator for tuning. This current should always be kept below 1.5 ma. when tuning.

If a test is being made without the test meter, it is necessary that both the battery switch and the test switch be turned on.

It is also possible to connect the 0 to 5 ma. D.C. meter across the coil of "Z" relay and check the operation of the other channel. The R.F. voltage must, of course be modulated at the #2 sub-carrier frequency.

In order to check the operation of the torsional relays, it is necessary that the generator be modulated with the proper sub-carrier and torsional relay frequencies, such as supplied by the type MC163 Impulse Keying Unit".

SUB-PARAGRAPH (10.1) TROUBLES AND PROBABLE CAUSES

Add the following under the heading "Warnings":

E. DETERMINE IF THE TUBES IN THE HIGH FREQUENCY SUB-CHASSIS HAVE BEEN PROPERLY INSERTED IN THE SOCKETS IN ACCORDANCE WITH THE SOCKET VIEWS SHOWN ON FIG. 10A, AND PHOTOGRAPHS SHOWN ON FIGS. 4A, 5A, AND 6A.

F. DETERMINE IF THE FIVE COVER SCREWS IN THE HIGH FREQUENCY SUB-CHASSIS ARE ALL IN PLACE AND **TIGHT.**

G. DETERMINE IF THE PLATE AND GRID CLIPS AND THEIR CONNECTING LEADS TO TYPE 959 TUBES ARE PROPERLY ORIENTED IN ORDER THAT THE ADJACENT CHASSIS SHIELDING OR OTHER COMPONENTS OF THE SUB-CHASSIS DO NOT TOUCH.

SUB-PARAGRAPH (10.1d3) RECOMMENDED PROCEDURE FOR LOCATING TROUBLE

Change second sentence to read:

"See voltage table on Fig. 10A".

SUB-PARAGRAPH (10-1d4) RECOMMENDED PROCEDURE FOR LOCATING TROUBLE

Delete entirely the "Gain per Stage Table" and substitute the following:

GAIN PER STAGE TABLE

TYPE OF INPUT SIGNAL USED	INPUT VOLTAGE	WHERE APPLIED	VOLTAGE GAIN
Sub-Carrier #1	3.8 volts	Grid of V7	
Sub-Carrier #2	3.8 volts	Grid of V8	
Sub-Carrier #1	.017 volts	Grid of V6	223.
Sub-Carrier #2	.025 volts	Grid of V6	152.
8 mc. Mod.			
75% with Sub-Car. #2	16,500 microvolts	Grid of V5	
75% with Sub-Car. #2	836 microvolts	Grid of V4	19.75
75% with Sub-Car. #2	190 microvolts	Grid of V10	4.4
174 mc. Mod.			
30% with Sub-Car. #2	190 microvolts	Grid of V10	
30% with Sub-Car. #2	40 microvolts	Grid of V9	4.75
30% with Sub-Car. #2	7 microvolts	Ant.	5.7

SUB-PARAGRAPH (10.4a) TYPE OF SIGNAL REQUIRED FOR TEST

Change sentence to read:

"An R.F. signal modulated 30% at either sub-carrier frequency".

SUB-PARAGRAPH (10.4b) MEASUREMENT OF SENSITIVITY

Change "50 ohm resistor" to "35 ohm resistor" in first sentence.

SUB-PARAGRAPH (11.1b) SENSITIVITY CURVE

Change "Fig. 19" in the sentence to "Fig. 12A".

SUB-PARAGRAPH (11.2) TUBE CHARACTERISTICS

Change "Figs. 21 to 24 inclusive" to "Figs. 21, 23, 24, 13A, and 14A".

PARAGRAPH (12) PARTS LIST AND DESCRIPTION

Delete the "Receiver Parts List," pages 24, 25, and 26; the "Relay Shelf Parts List," page 26; the "Cabinet Parts List," pages 26 and 27; the "Spare Parts List," page 28, and substitute the following parts list:

Change "NOTE" to read:

"Symbol numbers refer to schematic diagrams, Figs. 9A, 10A, and 11".

RECEIVER PARTS LIST—MAIN CHASSIS

CONDENSERS

CIRCUIT SYMBOL	FUNCTION	DESCRIPTION	MANUFACTURER	MFG. TYPE	MAGNAVOX NO.
C10	Plate By-pass for two Output Tubes	2 × .1 mfd. + 10 — 3% 400 V. Paper	Fast		A250077G2
C14	Modulator Plate Filter By-pass	.01 mfd ± 10% 300 V. Molded Mica	Solar	M.K.W.	B250095G59
C15	A.V.C. Filter 1st I.F. Stage	.01 mfd ± 10% 300 V. Molded Mica	Solar	M.K.W.	B250095G59
C16	1st I.F. Plate Filter By-pass	.01 mfd ± 10% 300 V. Molded Mica	Solar	M.K.W.	B250095G59
C17	A.V.C. Filter 2nd I.F. Stage	.01 mfd ± 10% 300 V. Molded Mica	Solar	M.K.W.	B250095G59
C18	1st I.F. Screen By-pass	.01 mfd ± 10% 300 V. Molded Mica	Solar	M.K.W.	B250095G59
C19	A.V.C. Filter	.01 mfd ± 10% 300 V. Molded Mica	Solar	M.K.W.	B250095G59
C20	R.F. By-pass Across Diode Load Resistor	35 mmfd. ± 3% 500 V. Ceramic	Centralab	Class D	B250088G4
C21	2nd I.F. Plate Filter By-pass	.01 mfd ± 10% 300 V. Molded Mica	Solar	M.K.W.	B250095G59
C22	1st Sub-carrier Grid Coupling	.001 mfd. ± 10% 500 V. Molded Mica	Solar	M.K.W.	B250074G47
C23	Filament By-pass	.01 mfd ± 10% 300 V. Molded Mica	Solar	M.K.W.	B250095G59
C24	R.F. By-pass for 90 Volt Battery Tap	.01 mfd ± 10% 300 V. Molded Mica	Solar	M.K.W.	B250095G59
C25	Filament By-pass	.01 mfd ± 10% 300 V. Molded Mica	Solar	M.K.W.	B250095G59
C26	R.F. By-pass for 67½ Volt Battery Tap	.01 mfd ± 10% 300 V. Molded Mica	Solar	M.K.W.	B250095G59

RESISTORS

CIRCUIT SYMBOL	FUNCTION	DESCRIPTION	MANUFACTURER	MFG. TYPE	MAGNAVOX NO.
R8	1st I.F. Stage A.V.C. Filter	510.000 ohms ± 5% Carbon 1/3 watt	Cont. Carbon	M 1/3	B230069G224
R9	1st I.F. Stage Plate Shunt Resistor	150.000 ohms ± 5% Carbon 1/3 watt	Cont. Carbon	M 1/3	B230069G211
R10	1st I.F. Stage Plate Filter	5100 ohms ± 5% Carbon 1/3 watt	Cont. Carbon	M 1/3	B230069G176
R11	1st I.F. Stage Screen Grid Filter	4700 ohms ± 10% Carbon 1/4 watt	Globar	997A	B230070G70
R12	2nd I.F. Stage A.V.C. Filter	510.000 ohms ± 5% Carbon 1/3 watt	Cont. Carbon	M 1/3	B230069G224
R13	A.V.C. Filter	3.9 megohms ± 5% Carbon 1/3 watt	Cont. Carbon	M 1/3	B230069G245
R14	2nd I.F. Stage Plate Filter	5100 ohms ± 5% Carbon 1/3 watt	Cont. Carbon	M 1/3	B230069G176
R15	Diode Load	100.000 ohms ± 5% Carbon 1/3 watt	Cont. Carbon	M 1/3	B230069G207
R16	1st Sub-carrier Grid Resistor	3.9 megohms ± 10% Carbon 1/4 watt	Globar	997A	B230070G105
R17	Modulator Plate Filter	5100 ohms ± 5% Carbon 1/3 watt	Cont. Carbon	M 1/3	B230069G176

I.F. TRANS. AND SUB-CARRIER FILTERS

CIRCUIT SYMBOL	FUNCTION	DESCRIPTION	MANUFACTURER	MFG. TYPE	MAGNAVOX NO.
L4	Sub-carrier Filter with pri. tap		Magnavox		X360106
L5	Sub-carrier Filter		Magnavox		X360097
T1	1st I.F. Transformer	8 megacycle Double Tuned Transformer	F. W. Sickles		B366001
T2	2nd I.F. Transformer	8 megacycle Double Tuned Transformer	F. W. Sickles		B366001
T3	3rd I.F. Transformer	8 megacycle Double Tuned Transformer	F. W. Sickles		B366001

RECEIVER PARTS LIST—MAIN CHASSIS

SOCKETS AND JACKS

CIRCUIT SYMBOL	FUNCTION	DESCRIPTION	MANUFACTURER	MFG. TYPE	MAGNAVOX NO.
J5	Test Jack for Connection to MM167 Test Meter	Single Circuit Jack with 2 switch contacts	Chicago Tel. Sply.		A180237
J7	Tube Sockets (5 required)	7 Prong Wafer Socket made of XXX bakelite	Cinch Mfg. Co.	#2540	A186001

PLUGS

CIRCUIT SYMBOL	FUNCTION	DESCRIPTION	MANUFACTURER	MFG. TYPE	MAGNAVOX NO.
P2	Connection between Battery Relay Shelf and Receiver	9 Prong Plug	American Phenolic	CP9	A180234G7

TUBES

CIRCUIT SYMBOL	FUNCTION	DESCRIPTION	MANUFACTURER	MFG. TYPE	MAGNAVOX NO.
V4	1st I.F. Amplifier	Type 1T4			
V5	2nd I.F. Amplifier	Type 1T4			
V6	2nd Detector, A.V.C. and 1st Sub-carrier amp.	Type 1S5			
V7	2nd Sub-carrier amp. Channel #1	Type 3S4			
V8	2nd Sub-carrier amp. Channel #2	Type 3S4			

RELAY SHELF PARTS LIST

CIRCUIT SYMBOL	FUNCTION	DESCRIPTION	MANUFACTURER	MFG. TYPE	MAGNAVOX NO.
C27	Output Filter Condenser	2 × 1 mfd. + 10 — 3% 400 V. Paper	Solar		A250090
R18	Output Current Limiting Resistor	200 ohms ± 5% 1/2 watt	Internat'l Resistance	BT 1/2	B230063G142
S1	Battery Switch	Double-pole single-throw Toggle Switch	Arrow, H & H		C160037G10
S2	Test Switch	Single-pole single-throw Toggle Switch	Arrow, H & H		C160037G9
J1	Relay Socket	4 #A180238 Jacks and 1 #440117G1 Insulator	Magnavox		See Description
J2	Relay Socket	4 #A180238 Jacks and 1 #440117G2 Insulator	Magnavox		See Description
J3	Relay Socket	4 #A180238 Jacks and 1 #440117G3 Insulator	Magnavox		See Description
P3	Interconnecting Plug	11 Prong Bakelite Plug	American Phenolic	CP11	A180234G8
T11	Automatic Timer	7.5 volts D.C. on 5 sec. off 2 min.	Wallace & Tiernan Eagle Signal	FU-920	500125 500126

CABINET PARTS LIST

CIRCUIT SYMBOL	FUNCTION	DESCRIPTION	MANUFACTURER	MFG. TYPE	MAGNAVOX NO.
	Cabinet	Less lids and assembled parts	Huenefeld		X636004G2
	Upper Lid	Complete with all assembled parts	Magnavox		X636051
	Lower Lid	Complete with all assembled parts	Magnavox		X636062
	Upper Lid	Less assembled parts	Huenefeld		C636054
	Lower Lid	Less assembled parts	Huenefeld		C636065
	Upper Lid Gasket	Moulded Sponge Rubber	Sponge-Rubber		B446001
	Lower Lid Gasket	Moulded Sponge Rubber	Sponge-Rubber		B446002
	Upper Lid Gasket Retainer		Huenefeld		C636056
	Access Opening for Test Meter Plug	Junction Shell	American Phenolic		A630919G1
	Screw Cap for Access Opening	Screw Cap and Chain	American Phenolic		A630920
	Battery Clamping Angle	Less Serial Plate	Cyclone Mfg.		B630925
	Battery Clamp Bushing	Brass Threaded 1/4"-#20			A630927
	Battery Clamping Bracket	1/4" Brass Hook Threaded 1/4"-#20			A630926
	Clamping Screws for Battery Bracket	1/4"-#20 Hex. Hd. Socket Cap Screws			A105461
	Socket Wrench for Clamping Screws	Socket Wrench			A800044G7
	Draw Bolts for Clamping Lids	Brass Drawbolts	Langenau		A636046
	Antenna Base Insulator	Ceramic Bushing	Stupakoff		A636042
	Antenna Mounting Stud	Brass Feed Through Bushing	Magnavox		A636001
	Antenna Base Insulator Gasket	Velumoid Gasket	Velumoid		A446007
	Antenna	13.5" brass, silver plated tubing with coupling nut	Aero-Rad	A4624	
P4	Output Plug	Complete Assembly			X180223
J6	Output Socket	Complete Assembly less Gasket			X180224
	Inside Mounting Gasket for Output Socket		Velumoid		A440107
	Outside Mounting Gasket for Output Socket		Velumoid		A440108
	Waterproof Gasket in Output Socket		Atlantic India Rubber		A101912G2
	Interconnecting Cable complete with J8, J9 and P5				C460146
J8	Interconnecting Socket for Receiver	9 Prong Socket with Cap	American Phenolic	PF-9	
J9	Interconnecting Socket for Relay Shelf	11 Prong Socket with Cap	American Phenolic	PF-11	
J12	External Power Socket	Complete Assembly	Aero-Rad	B4634	
P5	Battery Plug	8 Prong Plug	American Phenolic	70-8	
	A-B-C and Timer Supply Battery		Ray-O-Vac		B800049

RECEIVER PARTS LIST—HIGH FREQUENCY SUB-CHASSIS

CONDENSERS

CIRCUIT SYMBOL	FUNCTION	DESCRIPTION	MANUFACTURER	MFG. TYPE	AERO-RAD NO.
C28	Antenna Network, Input	4 to 30 mmfd., N500, Ceramic Trimmer	Erie Resistor	TS2A	
C29	Antenna Network, Output	4 to 30 mmfd., N500, Ceramic Trimmer	Erie Resistor	TS2A	
C30	Antenna Network, Coupling	51 mmfd. CC21UK510J, Ceramic	Erie Resistor	Ceramicon Style K	
C31	R.F. Stage, Tuning	1.5 to 7 mmfd., NPO, Ceramic Trimmer	Erie Resistor	TS2A	
C32	R.F. Stage, Fixed Tuning	7 mmfd. CC21HH070C, Ceramic	Erie Resistor	Ceramicon Style K	
C33	R.F. Stage, A.V.C. By-pass	1000 mmfd. ± 20%, 350V, Ceramic	Erie Resistor	GP2B 1000	
C34	R.F. Stage, By-pass, Filament Cathode Tap	1000 mmfd. ± 20%, 350V, Ceramic	Erie Resistor	GP2B 1000	
C35	R.F. Stage, Filament By-pass	1000 mmfd. ± 20%, 350V, Ceramic	Erie Resistor	Hi-K Ceramicon Style L1000	
C36	R.F. Stage, Screen By-pass	1000 mmfd. ± 20%, 350V, Ceramic	Erie Resistor	Hi-K Ceramicon Style L1000	
C37	R.F. Coupling, R.F. Stage to Modulator	51 mmfd. CC21UK510J, Ceramic	Erie Resistor	Ceramicon Style K	
C38	Modulator Stage, Tuning	1.5 to 7 mmfd., NPO, Ceramic Trimmer	Erie Resistor	TS2A	
C39	Modulator Stage, Fixed Tuning	4 mmfd. CC21HH040C Ceramic	Erie Resistor	Ceramicon Style K	
C40	R.F. By-pass, Modulator Bias	1000 mmfd. ± 20%, 350V, Ceramic	Erie Resistor	GP2B 1000	
C41	R.F. By-pass, Screen of Modulator	1000 mmfd. ± 20%, 350V, Ceramic	Erie Resistor	Hi-K Ceramicon Style L1000	
C42	R.F. By-pass Modulator Filament, Cathode Tap	1000 mmfd. ±20%, 350V, Ceramic	Erie Resistor	GP2B 1000	
C43	R.F. By-pass Modulator Filament	1000 mmfd. ±10%, 350V, Ceramic	Erie Resistor	Hi-K Ceramicon Style L1000	

CONDENSERS

CIRCUIT SYMBOL	FUNCTION	DESCRIPTION	MANUFACTURER	MFG. TYPE	AERO-RAD NO.
C44	R.F. Coupling, Oscillator to Modulator	2 mmfd. CC21CK020C Ceramic	Erie Resistor	Ceramicon Style K	
C45	R.F. Oscillator, Tuning	1.5 to 7 mmfd., NPO, Ceramic Trimmer	Erie Resistor	TS2A	
C46	R.F. Oscillator, Fixed Tuning	6 ± .5 mmfd. NO30 ± 30 p.p.m.	Erie Resistor	Ceramicon Style K	
C47	R.F. Oscillator, Grid Coupling	51 mmfd. CC21SH510K Ceramic	Erie Resistor	Ceramicon Style K	
C48	R.F. By-pass, Oscillator Filament Cathode Tap	1000 mmfd. ± 20%, 350V, Ceramic	Erie Resistor	GP2B 1000	
C49	R.F. By-pass, Oscillator Filament	1000 mmfd. ± 20%, 350V, Ceramic	Erie Resistor	Hi-K Ceramicon Style L1000	
C50	R.F. By-pass, Oscillator + 90 Volts to ground	1000 mmfd. ± 20%, 350V, Ceramic	Erie Resistor	Hi-K Ceramicon Style L1000	
C51	R.F. By-pass, Oscillator	15 mmfd. ± 2%, NPO ± 30 p.p.m.	Centralab	CC20Z	

RESISTORS

CIRCUIT SYMBOL	FUNCTION	DESCRIPTION	MANUFACTURER	MFG. TYPE	AERO-RAD NO.
R19	A.V.C. Dividing, R.F. Stage	1.5 megohm, ± 10%, 1/4W Insulated	Allen Bradley	EB-1551	
R20	A.V.C. Dividing, R.F. Stage	3.9 megohm, ± 10%, 1/4W Insulated	Allen Bradley	EB-3951	
R21	Screen Decoupling R.F. Stage	1000 ohm, ± 10%, 1/4W Insulated	Allen Bradley	EB-1021	
R22	Bias, Modulator Stage	.220 megohm, ± 10%, 1/4W Insulated	Allen Bradley	EB-2241	
R23*	Bias Dividing, Modulator Stage	5.1 megohm, ± 10%, 1/4W Insulated	Allen Bradley	EB-5055	
R24*	Bias Dividing, Modulator Stage	5.1 megohm, ± 10%, 1/4W Insulated	Allen Bradley	EB-5055	
R25	Screen Decoupling Modulator Stage	1000 ohm, ± 10%, 1/4W Insulated	Allen Bradley	EB-1021	
R26	R.F. Oscillator Plate Feed	2200 ohm, ± 10%, 1/2W Insulated	Allen Bradley	EB-2221	
R27	R.F. Oscillator Grid	27000 ohm, ± 10%, 1/2W Insulated	Allen Bradley	EB-2731	

*NOTE: Resistors R23 and R24 are located on underside of main chassis.

RECEIVER PARTS LIST—HIGH FREQUENCY SUB-CHASSIS — Continued

R. F. COILS

CIRCUIT SYMBOL	FUNCTION	DESCRIPTION	MANUFACTURER	MFG. TYPE	AERO-RAD NO.
L6	Antenna Network, Input		Aero-Rad		A-4628A
L7	Antenna Network, Output		Aero-Rad		A-4629A
L8	Coupling Coil between Antenna Network and R.F. Tube		Aero-Rad		A-4626
L9	Coupling Coil between R.F. and Modulator Tubes		Aero-Rad		A-4625
L10	Oscillator Coil		Aero-Rad		A-4627
L11	R.F. Choke Coil, R.F. Stage Plate Circuit		Aero-Rad		A-4640
L12	R.F. Choke Coil, Oscillator Plate Circuit		Aero-Rad		A-4640
L13	R.F. Choke Coil, Oscillator Grid Circuit		Aero-Rad		A-4640

TUBES

CIRCUIT SYMBOL	FUNCTION	DESCRIPTION	MANUFACTURER	MFG. TYPE	AERO-RAD NO.
V9	R.F. Amplifier	JAN 959			
V10	Modulator	JAN 959			
V11	Oscillator	JAN 958-A			

SOCKETS

CIRCUIT SYMBOL	FUNCTION	DESCRIPTION	MANUFACTURER	MFG. TYPE	AERO-RAD NO.
J10	Connection between Antenna & Receiver	Pin Jack Type, Polystyrene	Amphenol	54-1H	
J11	Tube Sockets (3 required)	Acorn 5 Terminal Ceramic	Hammarlund	UHS-900	

PLUGS

CIRCUIT SYMBOL	FUNCTION	DESCRIPTION	MANUFACTURER	MFG. TYPE	AERO-RAD NO.
P6	Connection between Antenna & Receiver	Single Prong Plug	Allied Radio	41-200	

SPARE PARTS LIST
(One Set to Every Ten Modified R-127 Units)

QUANTITY	DESCRIPTION	CIRCUIT SYMBOL	MAGNAVOX NO.	AERO-RAD NO.
1	Sub-Carrier Filter	L4	X360106	
1	Sub-Carrier Filter	L5	X360097	
1	2 x .1 mfd. Condensers	C10	A250077G2	
1	35 mmfd. ± 3% Ceramic Cond.	C20	B250088G4	
1	.01 mfd. ± 10% Molded Mica Cond.	C14, C15, C16, C17, C18, C19, C21, C24, C25, C26	B250095G59	
1	.001 mfd. ± 10% Molded Mica Cond.	C22	B250074G47	
1	Carbon Resistor 3.9 megohm 1/4W	R16, R20	B230070G105	
1	Carbon Resistor 4700 ohms 1/4W	R11	B230070G70	
1	Carbon Resistor 5100 ohms 1/3W	R10, R14, R17	B230069G176	
1	Carbon Resistor 150,000 ohms 1/3W	R9	B230069G211	
1	Carbon Resistor 510,000 ohms, 1/3W	R8, R12	B230069G224	
1	Carbon Resistor 3.9 megohm 1/3W	R13	B230069G245	
1	Carbon Resistor 100,000 ohm 1/3W	R15	B230069G207	
1	Carbon Resistor 200 ohm 1/2W	R18	B230063G142	
1	Condenser 2 x 1 mfd.	C27	A250090	
1	Carbon Resistor 1.5 megohm 1/4W	R19		
1	Carbon Resistor 1000 ohms 1/4W	R21, R25		
1	Carbon Resistor 220,000 ohms 1/4W	R22		
1	Carbon Resistor 5.1 megohm 1/4W	R23, R24		
1	Carbon Resistor 2200 ohms 1/2W	R26		
1	Carbon Resistor 27,000 ohms 1/2W	R27		
1	Condenser 4-30 mmfd. Ceramic Trimmer	C28, C29		
1	Ceramic Condenser 51 mmfd.	C30, C37		
1	Condenser 1.5-7 mmfd. Ceramic Trimmer	C31, C38, C45		
1	Ceramic Condenser, 7mmfd.	C32		
1	Ceramic Condenser Non-insulated, 1000 mmfd	C33, C34, C40, C42, C48		
1	Ceramic Condenser, Insulated, 1000 mmfd.	C35, C36, C41, C43, C49, C50		
1	Ceramic Condenser 4 mmfd.	C39		
1	Ceramic Condenser 2 mmfd.	C44		
1	Ceramic Condenser 6 mmfd.	C46		
1	Ceramic Condenser 51 mmfd.	C47		
1	Ceramic Condenser 15 mmfd.	C51		
1	R.F. Coil Antenna Network, Input	L6		A-4628A
1	R.F. Coil Antenna Network, Output	L7		A-4629A
1	R.F. Coil, R.F. Stage	L8		A-4626
1	R.F. Coil, Modulator Stage	L9		A-4625
1	R.F. Coil, Oscillator	L10		A-4627
1	R.F. Coil, Choke	L11, L12, L13		A-4640

LIST OF MANUFACTURERS

1. Aero-Rad Corp., Youngstown, Ohio.
2. Allen Bradley Co., Milwaukee, Wis.
3. Allied Radio, Chicago, Ill.
4. American Phenolic Corp., Chicago, Ill.
5. Arrow, Hart & Hegeman, Hartford, Conn.
6. Atlantic India Rubber Works, Chicago, Ill.
7. Allen D. Cardwell Mfg. Co., Brooklyn, N. Y.
8. Centralab, Milwaukee, Wis.
9. Chicago Telephone Supply, Elkhart, Ind.
10. Cinch Manufacturing Co., Chicago, Ill.
11. Continental Carbon Co., New York, N. Y.
12. Cyclone Manufacturing Co., Urbana, Ind.
13. Eagle Signal Corporation, Moline, Ill.
14. Erie Resistor Corporation, Erie, Pa.
15. John E. Fast Co., Chicago, Ill.
16. Globar Corporation, Niagara Falls, N. Y.
17. Hammarlund Mfg. Co., New York, N. Y.
18. Huenefeld Co., Cincinnati, Ohio.
19. International Resistance Co., Philadelphia, Pa.
20. Langenau Mfg. Co., Cleveland, Ohio.
21. The Magnavox Co., Fort Wayne, Ind.
22. Ray-O-Vac Co., Madison, Wis.
23. F. W. Sickles Co., Springfield, Mass.
24. Solar Mfg. Co., Bayonne, N. J.
25. Sponge Rubber Co., Derby, Conn.
26. Stupakoff Mfg. Co., Latrobe, Pa.
27. Velumoid Co., Worcester, Mass.
28. Wallace & Tiernan Prod. Co., Belleville, N. J.

AMENDMENTS
to
THE ILLUSTRATIONS AND DIAGRAMS
of
INSTRUCTION BOOK
FOR TYPE R-127
RADIO RECEIVING CONTROL
CONVERTING RECEIVER
to
TYPE R-127
RADIO RECEIVING
CONTROL

Delete the Frontispiece on Page 3 and substitute:

"Frontispiece, Showing Complete Unit with Shortened Antenna and External Power Outlet Plug".

Delete Fig. 1 and substitute:

"Fig. 1A, Front View of Complete Modified Unit, Covers Removed".

Delete Fig. 2 and substitute:

"Fig. 2A, Top View of Modified Receiver".

Add "Fig. 3A, Front View of Receiver with Cover Removed from the High Frequency Sub-Chassis".

Delete Fig. 3 and substitute:

"Fig. 4A, Bottom View of Main Chassis".

Add "Fig. 5A, Front View High Frequency Sub-Chassis".

Add "Fig. 6A, Rear View High Frequency Sub-Chassis".

Delete Fig. 6, and substitute:

"Fig. 7A, Dimensions and Weight of Modified Receiver".

Delete Fig. 7, and substitute:

"Fig. 8A, Dimensions and Weight of Cabinet, with Modified Receiver".

Delete Fig. 10, and substitute:

"Fig. 9A, Schematic Diagram of Modified Receiver".

Delete Fig. 12, and substitute:

"Fig. 10A, Wiring Diagram of Modified Receiver".

Delete Fig. 15, and substitute:

"Fig. 11A, Complete Modified Unit Assembly".

Delete Fig. 19, and substitute:

"Fig. 12A, Performance Curves, Modified Receiver".

Delete Fig. 22.

Add "Fig. 13A, Tube Characteristics, Type 958-A".

Add "Fig. 14A, Tube Characteristics, Type 959".

Frontispiece, Showing Complete Unit with Shortened Antenna and External Power Outlet Plug.

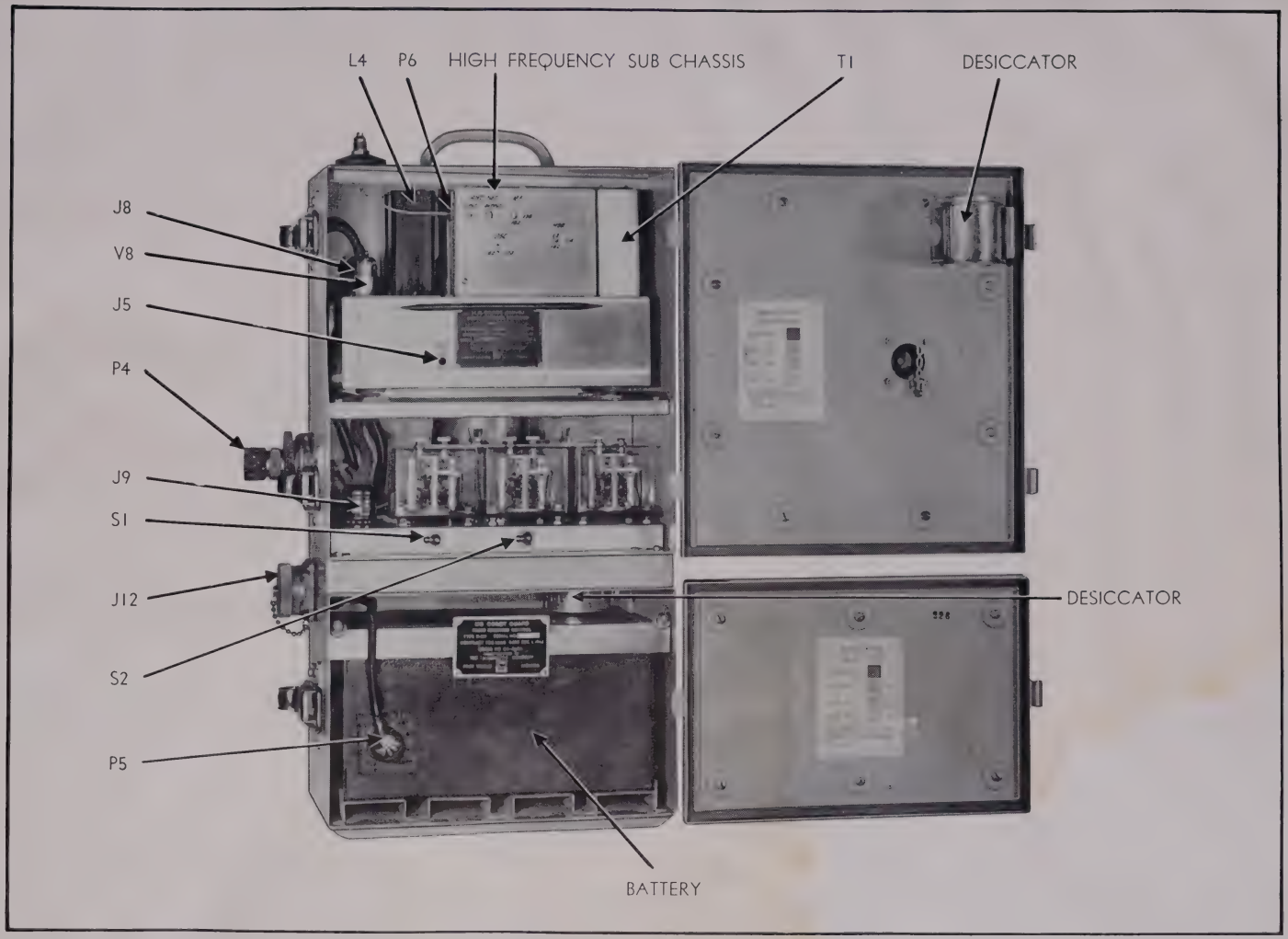


Fig. 1A, Front View of Complete Modified Unit, Covers Removed.

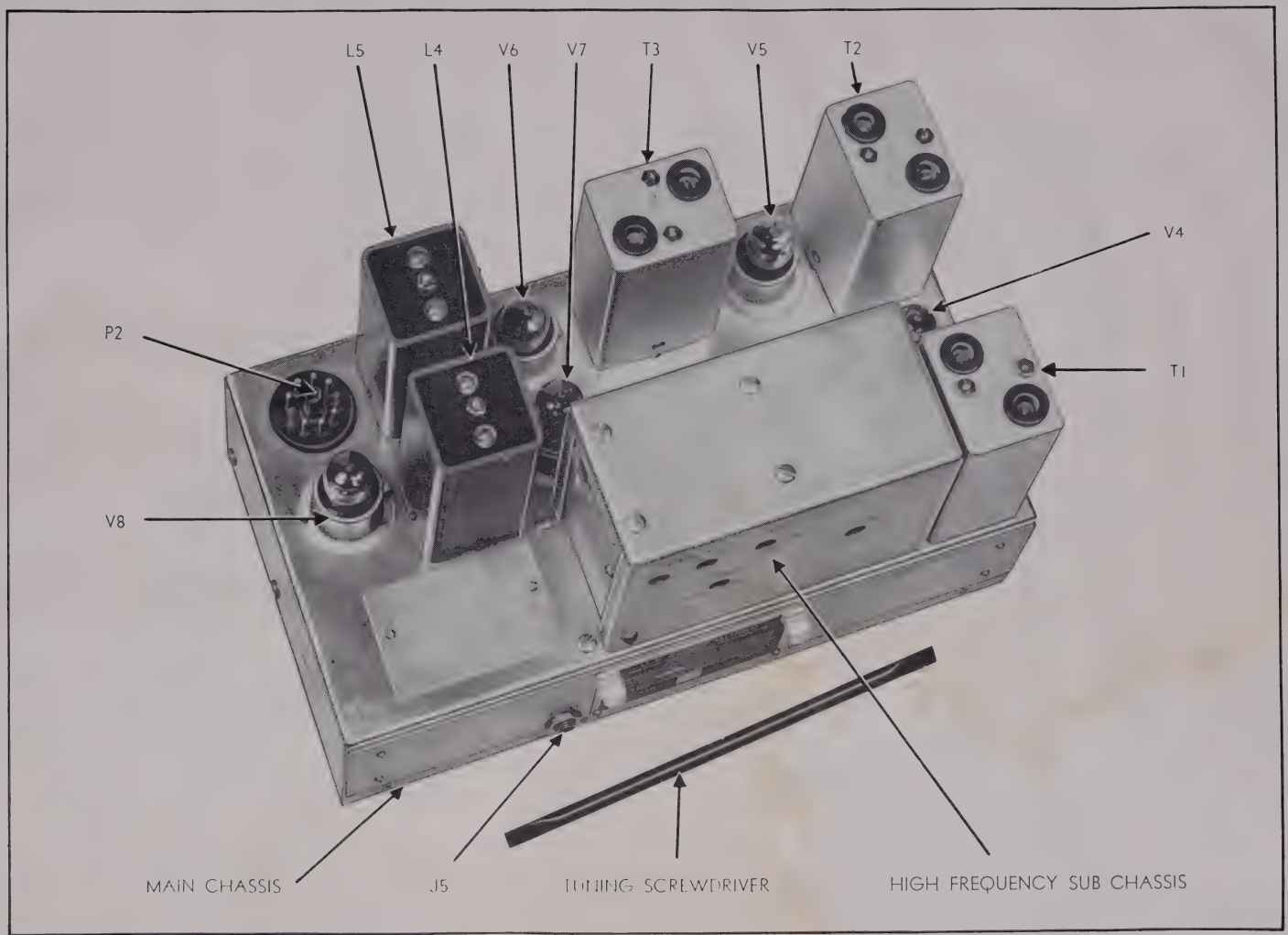


Fig. 2A, Top View of Modified Receiver.

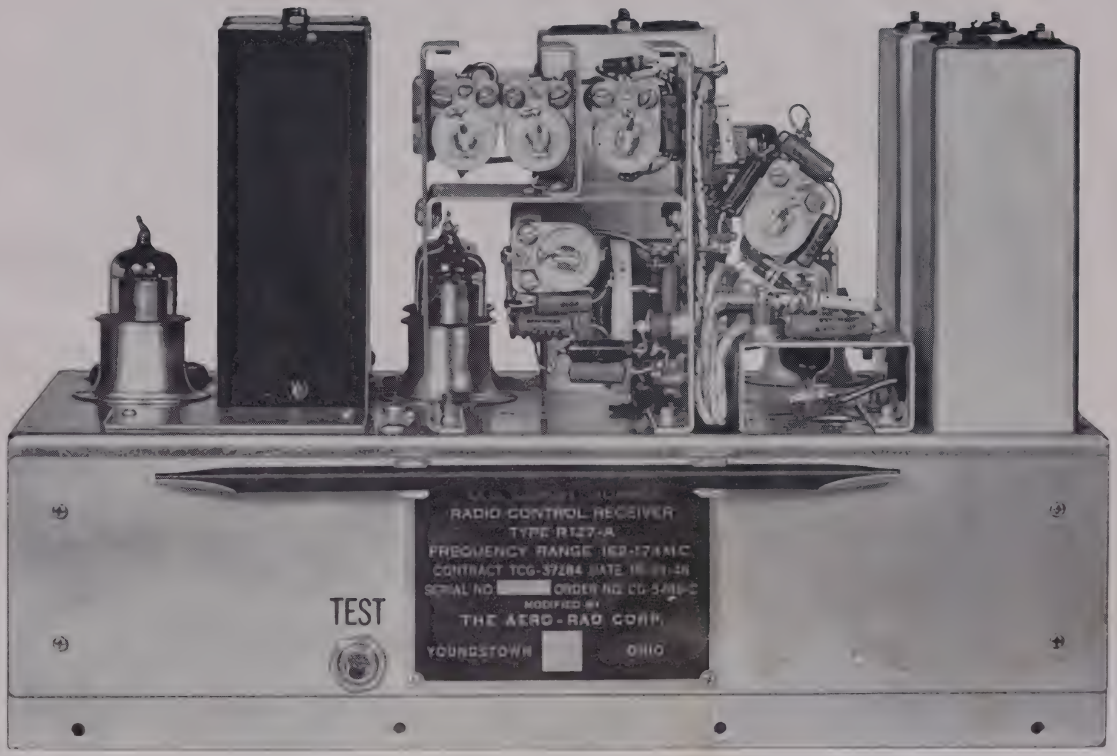


Fig. 3A, Front View of Receiver with Cover Removed from the Higg Frequency Sub-chassis.

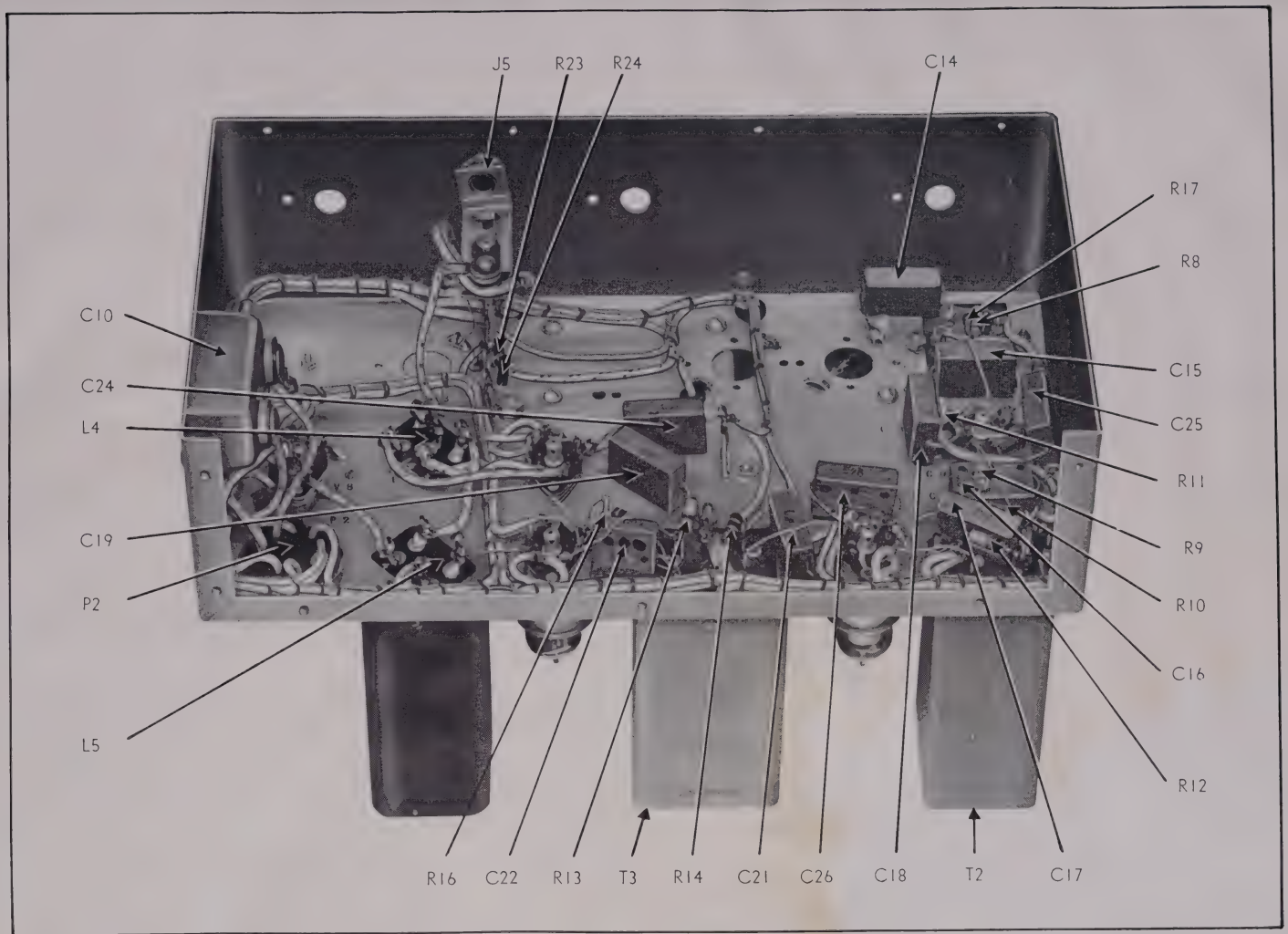


Fig. 4A, Bottom View of Main Chassis.

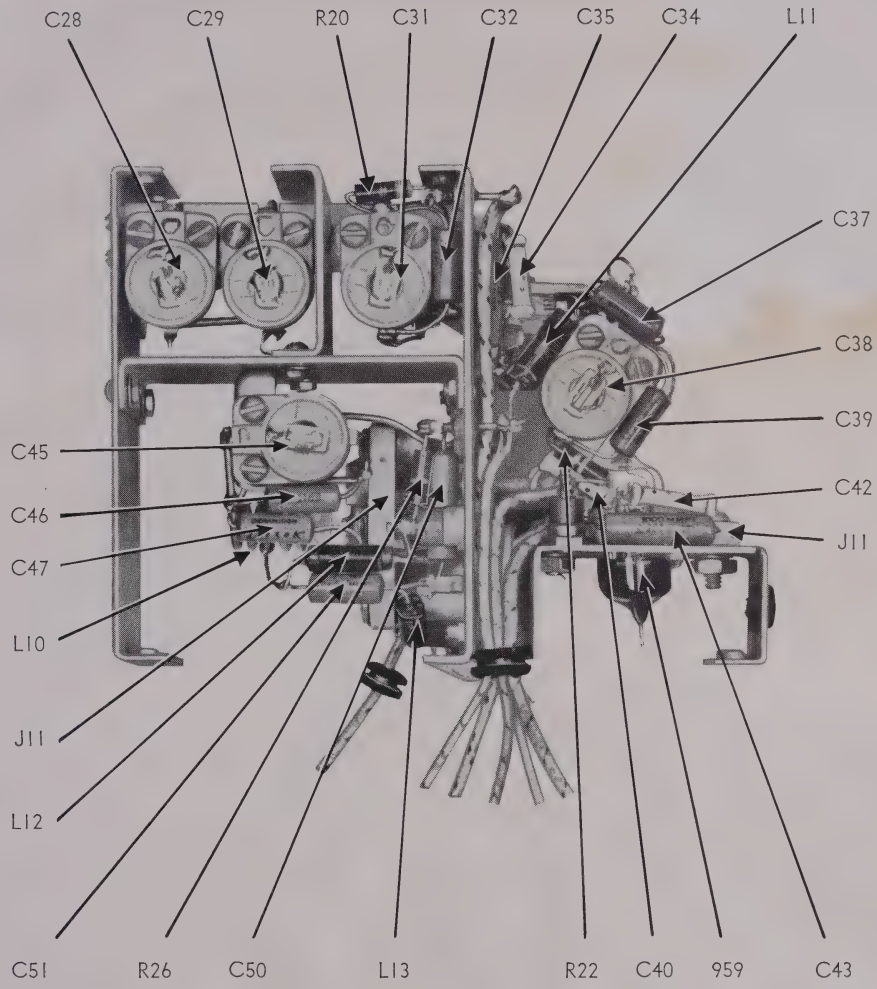


Fig. 5A, Front View High Frequency Sub-chassis.

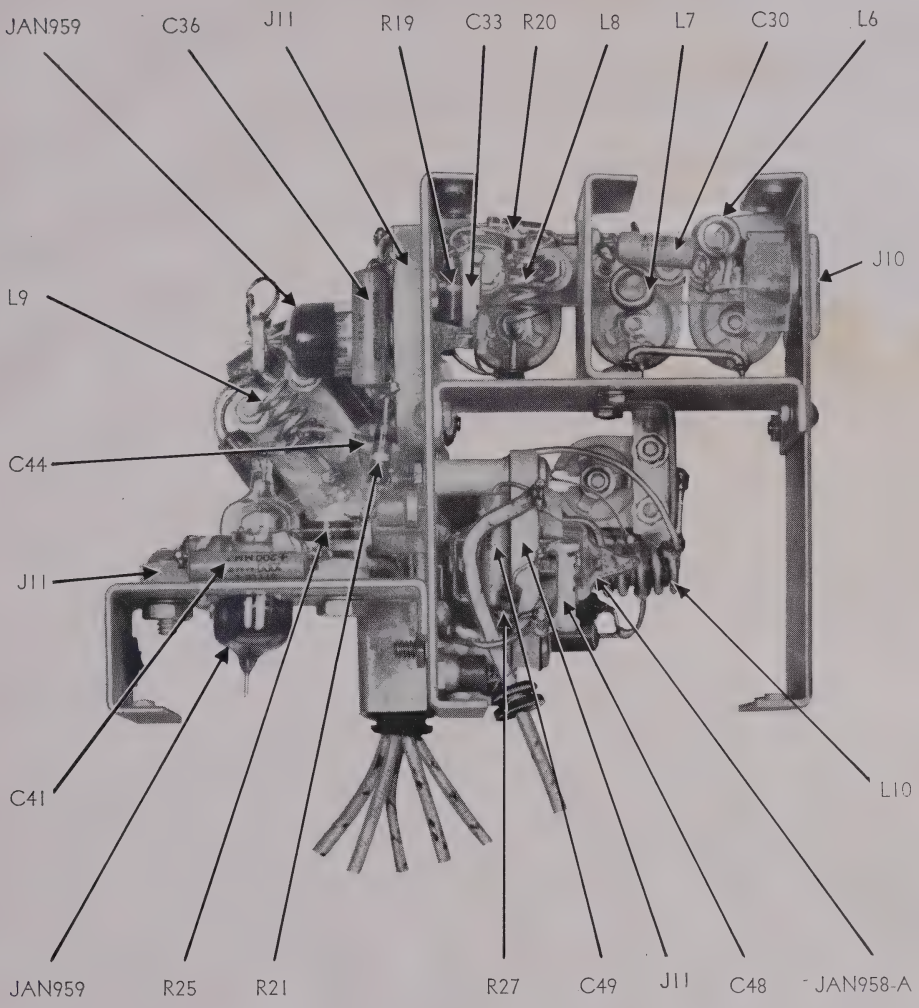


Fig. 6A, Rear View High Frequency Sub-chassis.

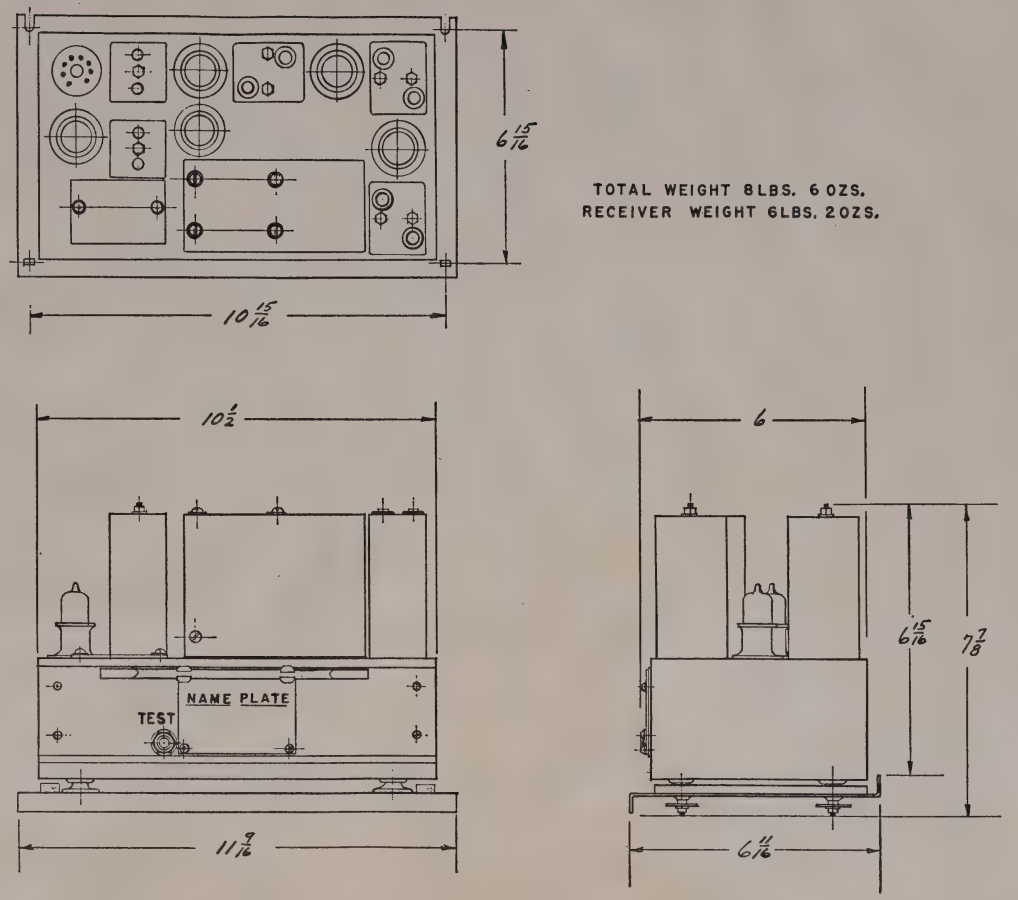


Fig. 7A, Dimensions and Weight of Modified Receiver.

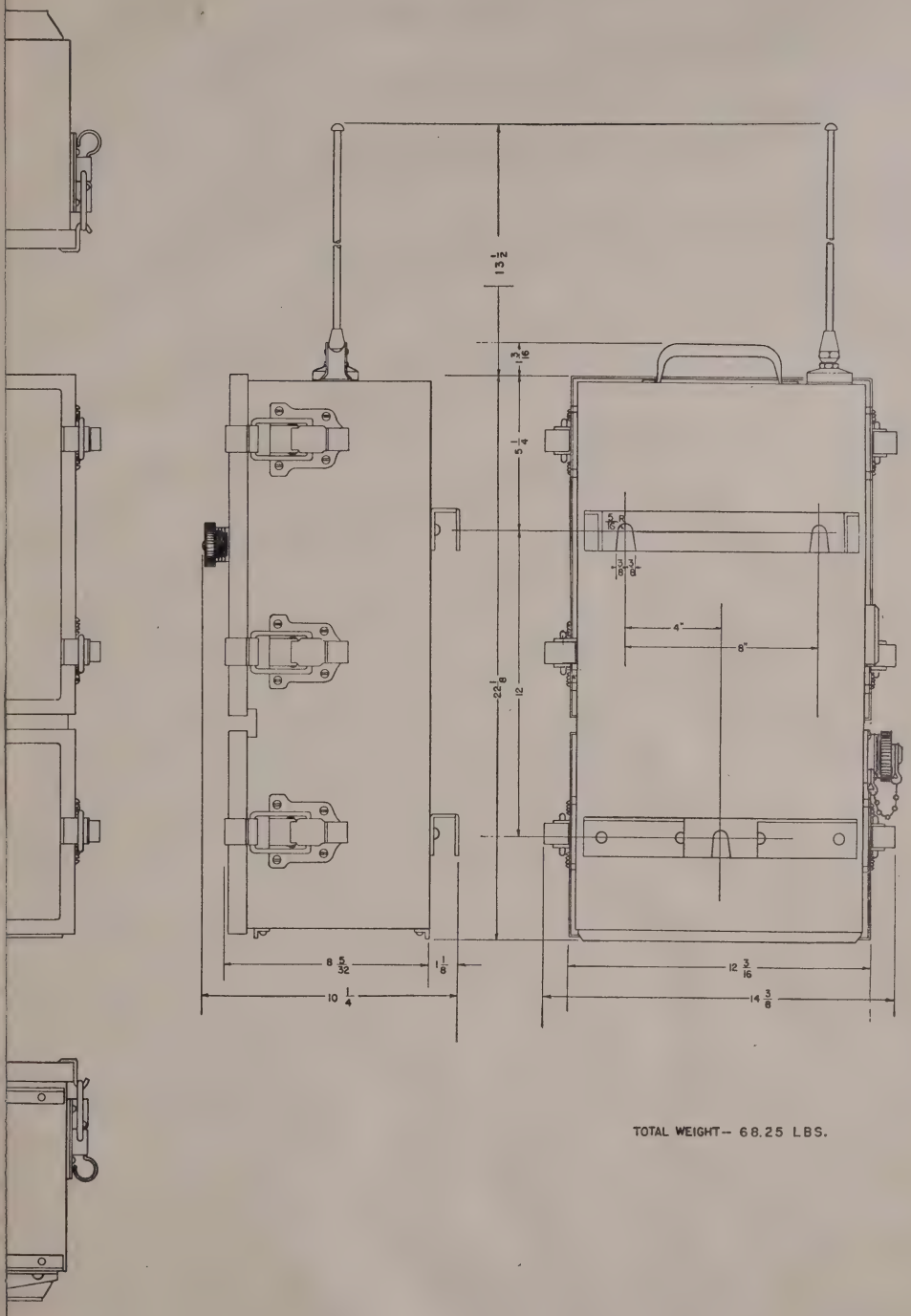


Fig. 8A, Dimensions and Weight of Cabinet with Modified Receiver.

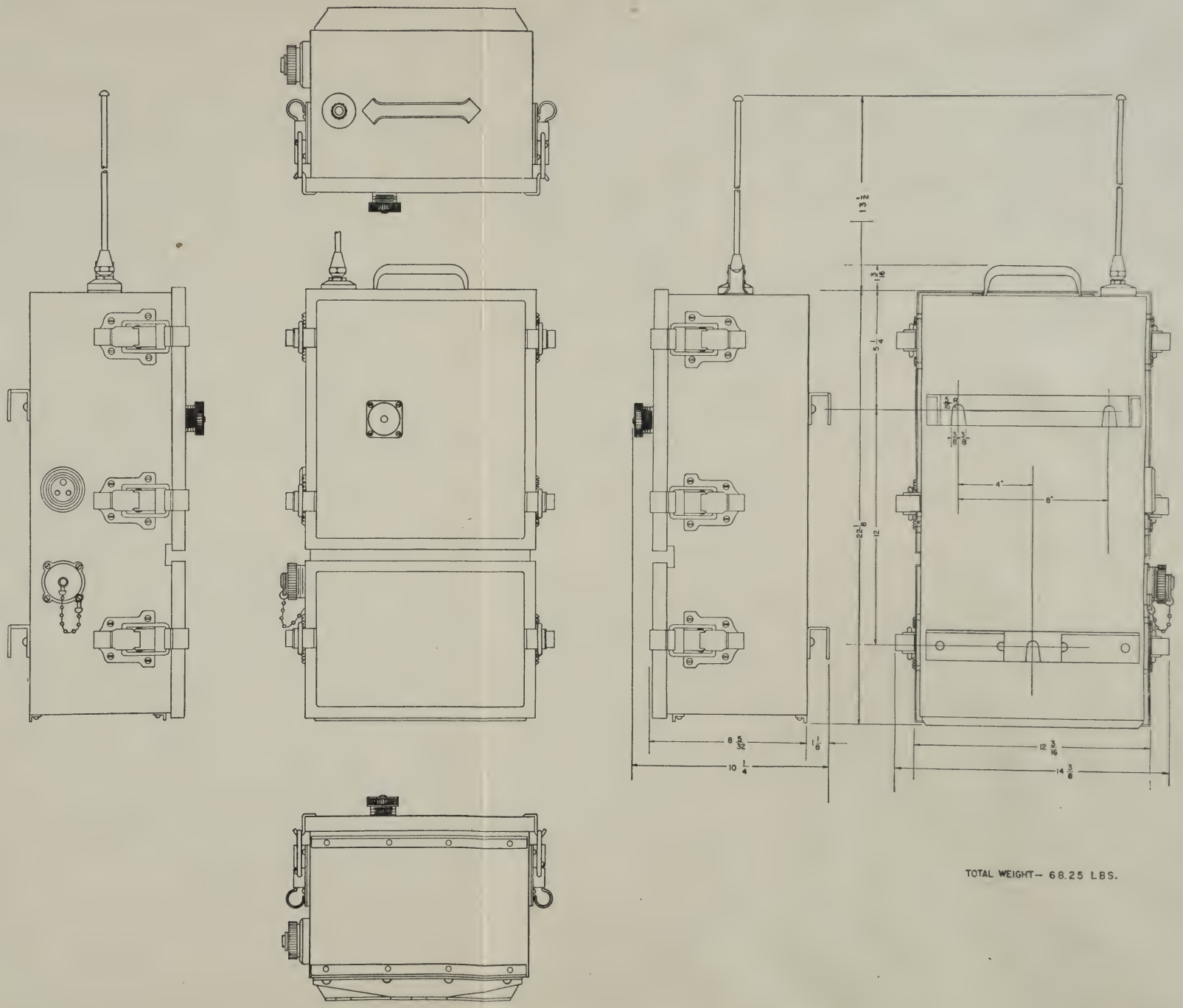


Fig. 8A, Dimensions and Weight of Cabinet with Modified Receiver.

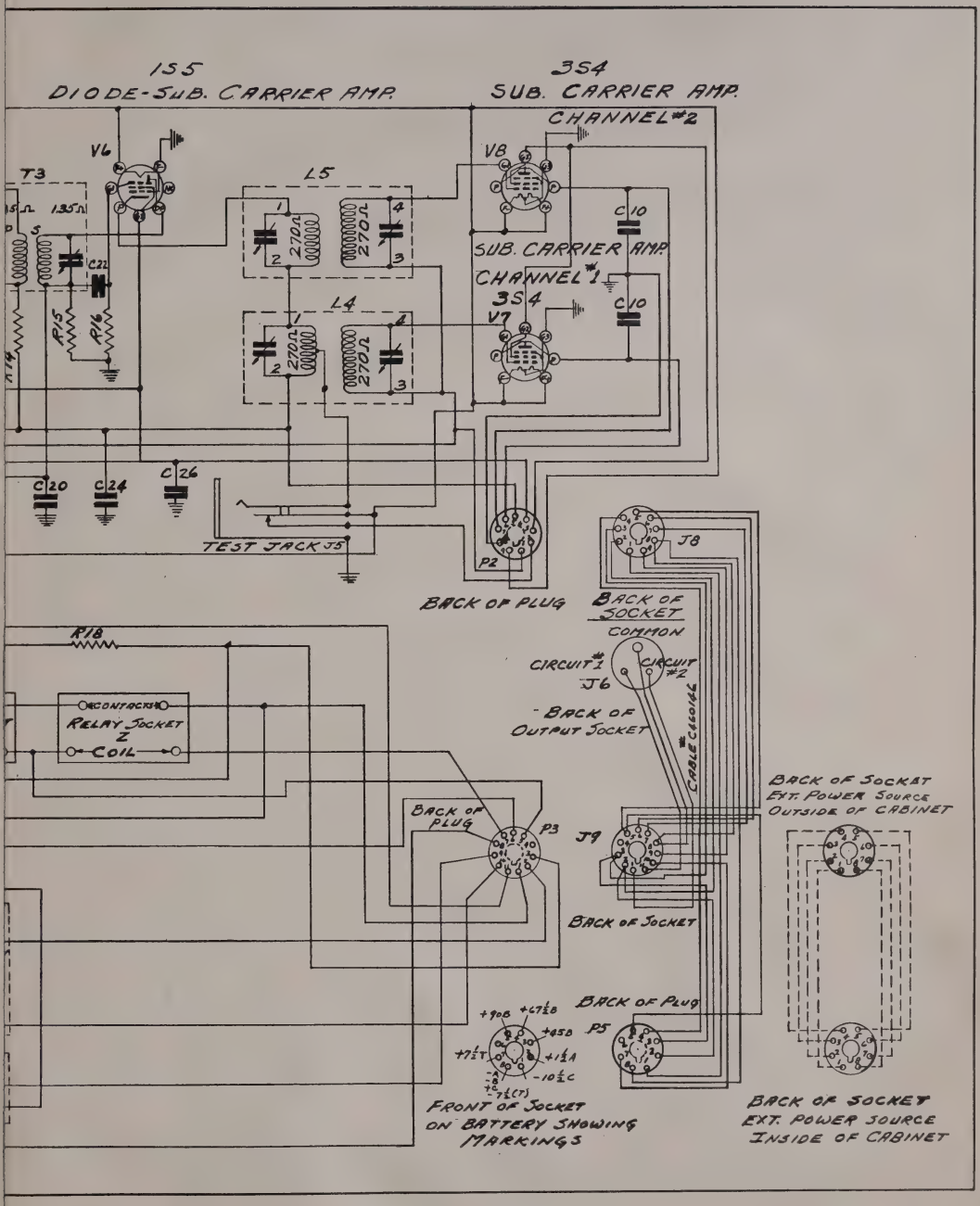


Fig. 9A, Schematic Diagram of Modified Receiver.

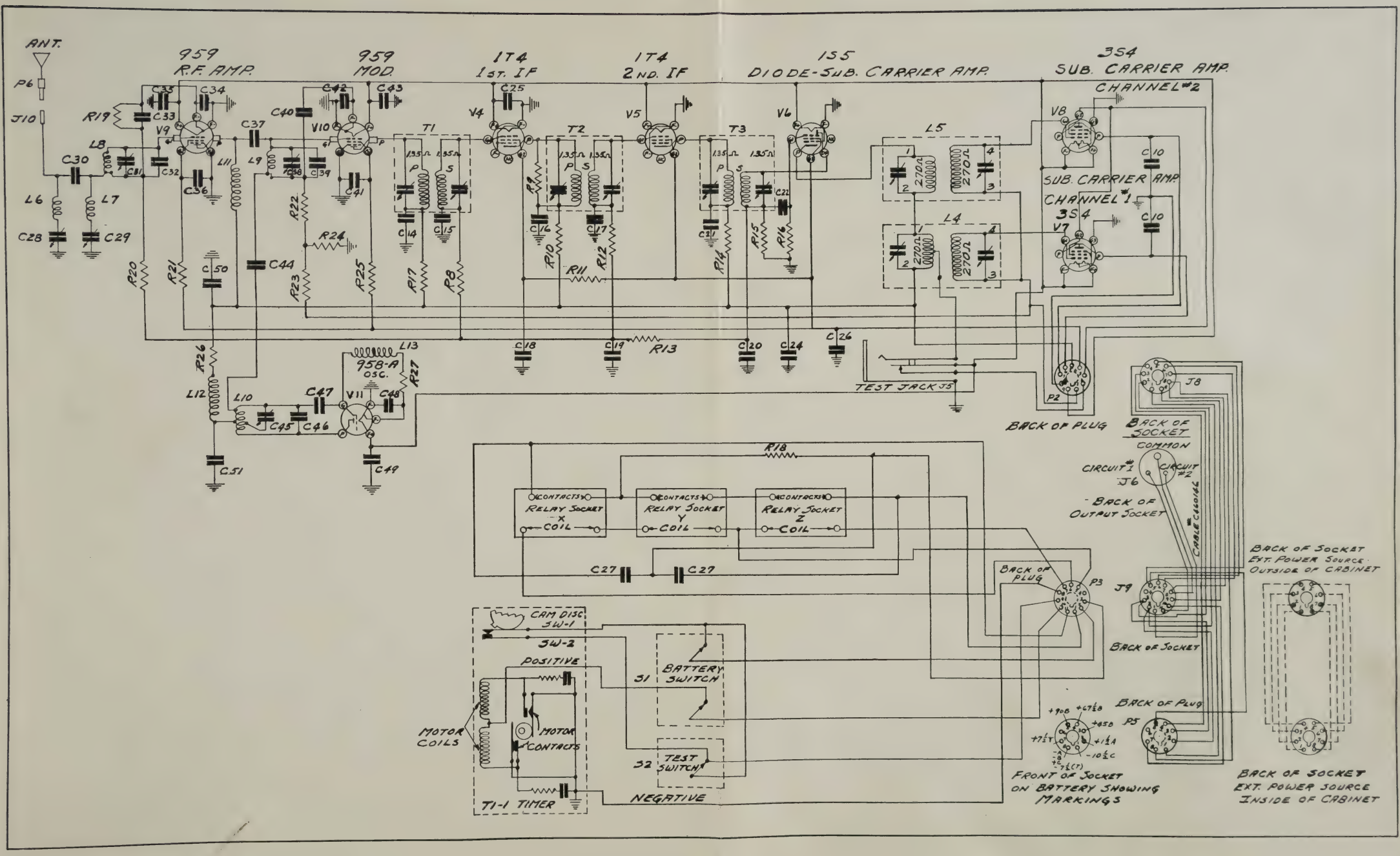
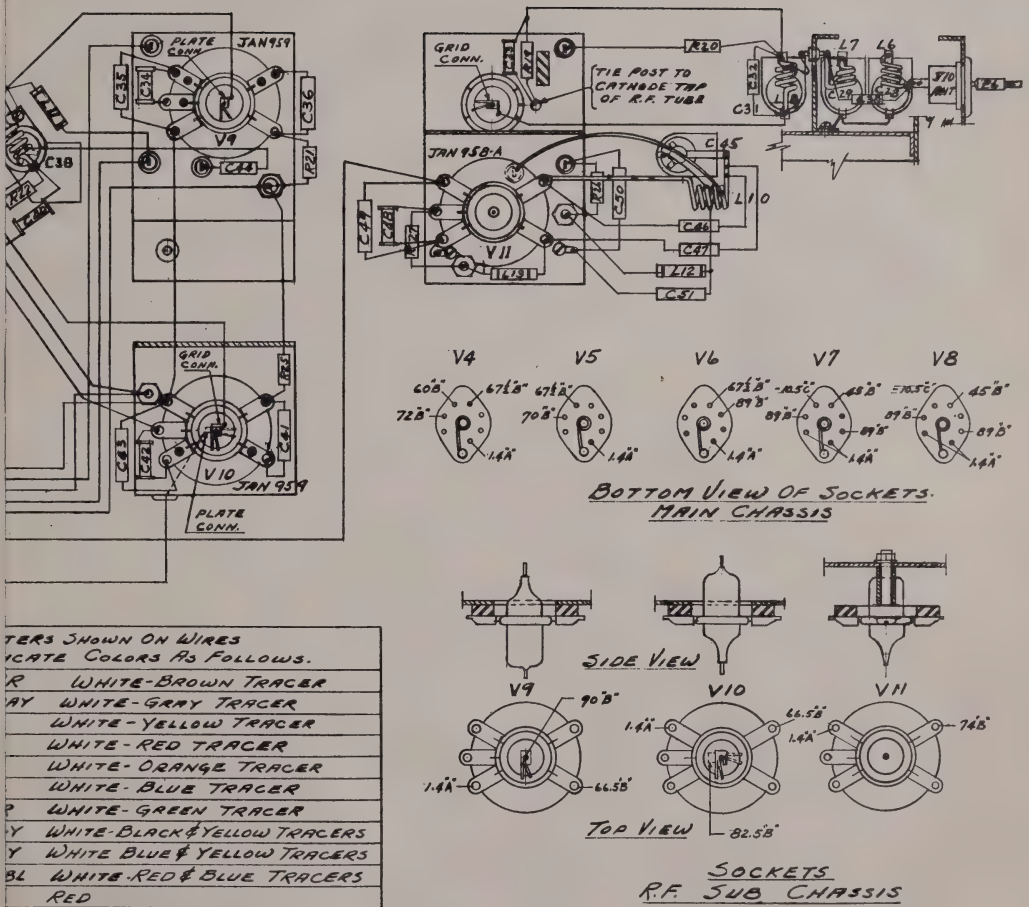


Fig. 9A, Schematic Diagram of Modified Receiver.



TERS SHOWN ON WIRES ICATE COLORS AS FOLLOWS.	
R	WHITE-BROWN TRACER
AY	WHITE-GRAY TRACER
	WHITE-YELLOW TRACER
	WHITE-RED TRACER
	WHITE-ORANGE TRACER
	WHITE-BLUE TRACER
P	WHITE-GREEN TRACER
Y	WHITE-BLACK & YELLOW TRACERS
Y	WHITE BLUE & YELLOW TRACERS
BL	WHITE-RED & BLUE TRACERS
	RED
THER WIRE ARE BARE BUS WIRE	

Fig. 10A, Wiring Diagram of Modified Receiver.

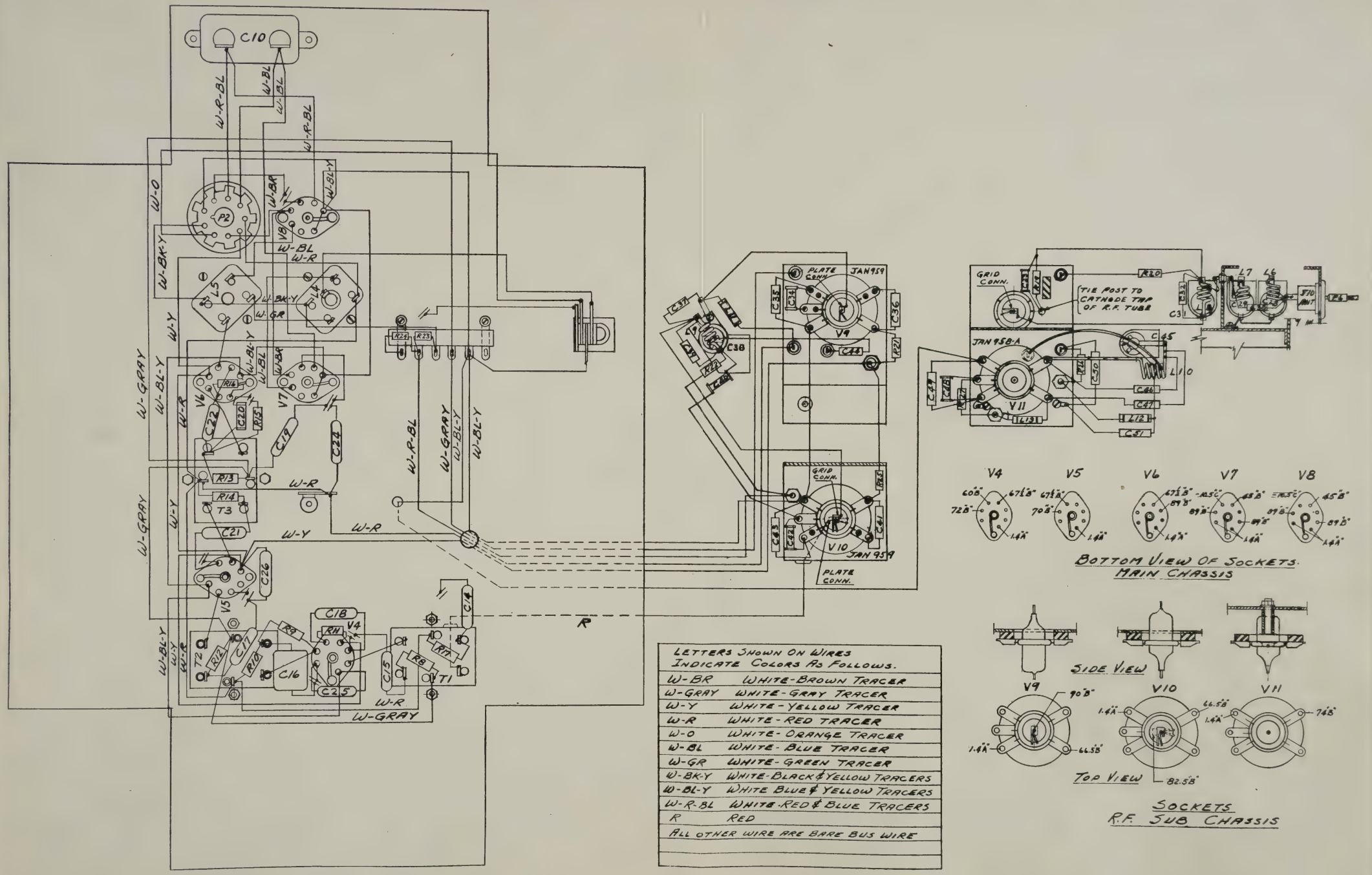
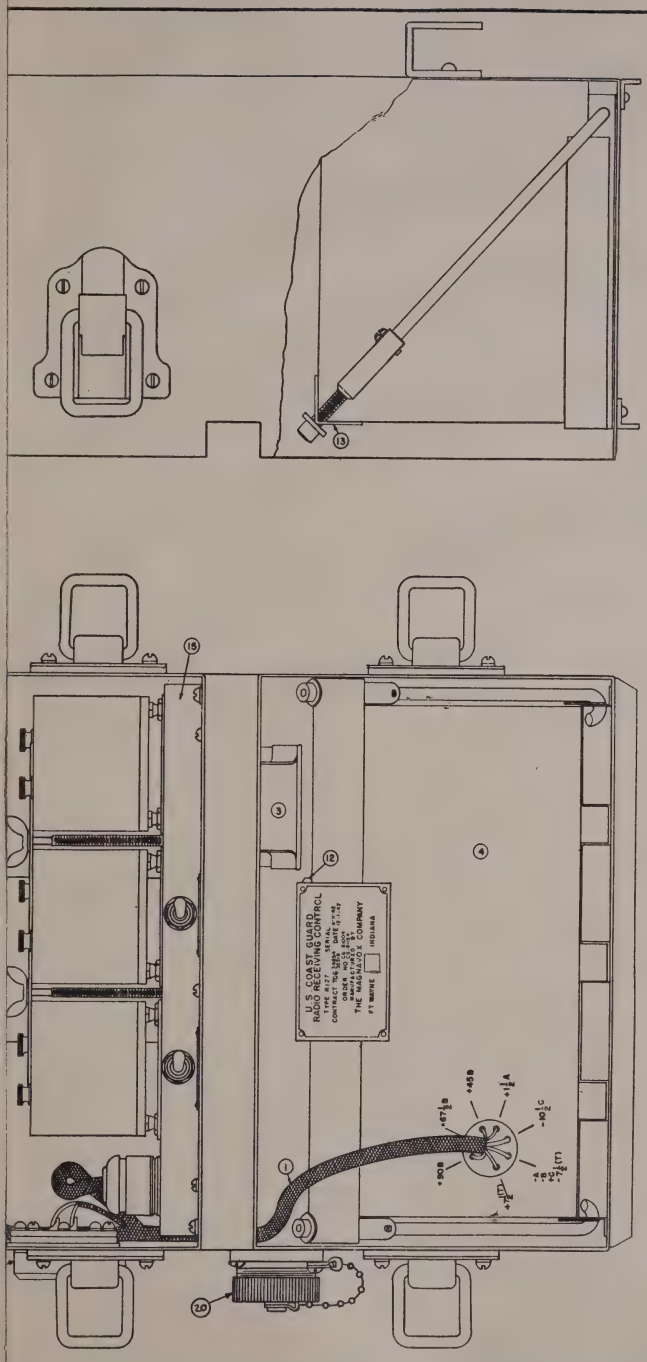
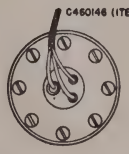


Fig. 10A, Wiring Diagram of Modified Receiver.

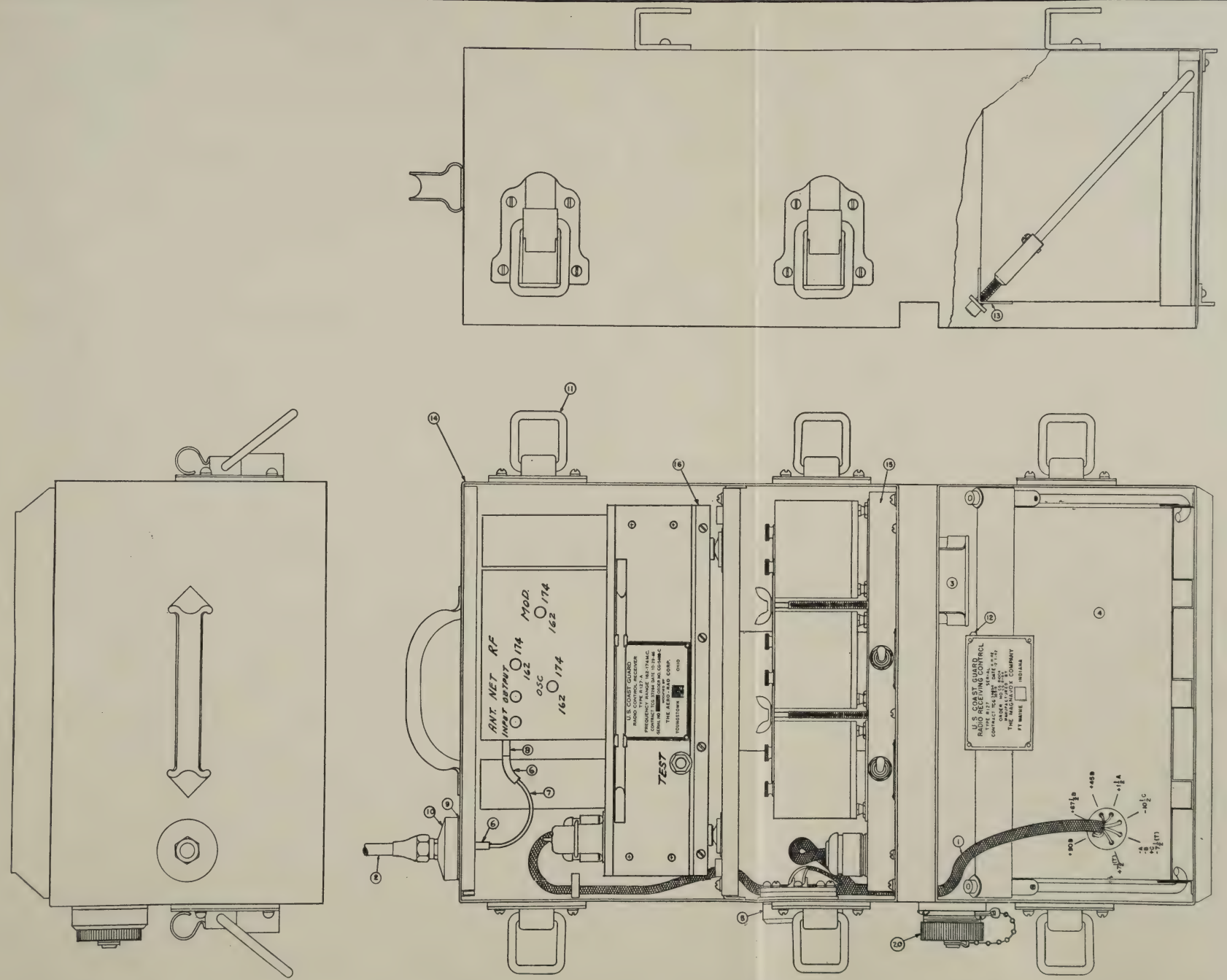


1	B4634	20	EXT. POW. SOCKET ASS'Y
1	X180223	19	OUTPUT PLUG ASS'Y (NOT SHOWN)
1	X636051	18	UPPER LID (NOT SHOWN)
1	X636062	17	LOWER LID (NOT SHOWN)
1	C4601	16	CHASSIS
1	X700032	15	SHELF
1	X636004	14	CABINET ASSEMBLY
1	X630936	13	BATTERY CLAMP ASSEMBLY
1	A800047G7	12	SOCKET WRENCH
6	A636046	11	DRAWBOLT
1	X636041	10	ANT. FEED THRU BUSHING ASSY.
1	A446007	9	GASKET
1		8	ANT CONNECTOR PLUG
		7	WIRE
		6	VARNISHED CAMBRIC TUBING
1	X180224	5	SOCKET
1	B800049	4	BATTERY
	X826002	3	SILICA GEL
1	A4624	2	ANTENNA ASSEMBLY
1	C460146	1	CABLE
REQ'D	PART NO.	ITEM	NAME



BACK OF X180224 (ITEM-5) SOCKET ASSEMBLY.

Fig.11A, Complete Modified Unit Assembly.



REQD	PART NO	ITEM	NAME
1	B4634	20	EXT. POW. SOCKET ASS'Y
1	X180223	19	OUTPUT PLUG ASSY (NOT SHOWN)
1	X636051	18	UPPER LID (NOT SHOWN)
1	X636062	17	LOWER LID (NOT SHOWN)
1	C46011	16	CHASSIS
1	X700032	15	SHELF
1	X636004	14	CABINET ASSEMBLY
1	X630936	13	BATTERY CLAMP ASSEMBLY
1	A800047G7	12	SOCKET WRENCH
6	A636046	11	DRAWBOLT
1	X636041	10	ANT FEED THRU BUSHING ASSY
1	A446007	9	GASKET
1		8	ANT CONNECTOR PLUG
		7	WIRE
		6	VARNISHED CAMBRIC TUBING
1	X180224	5	SOCKET
1	B800049	4	BATTERY
	X826002	3	SILICA GEL
1	A4624	2	ANTENNA ASSEMBLY
1	C460146	1	CABLE

BACK OF X180224 (ITEM-5) SOCKET ASSEMBLY

Fig.11A, Complete Modified Unit Assembly.

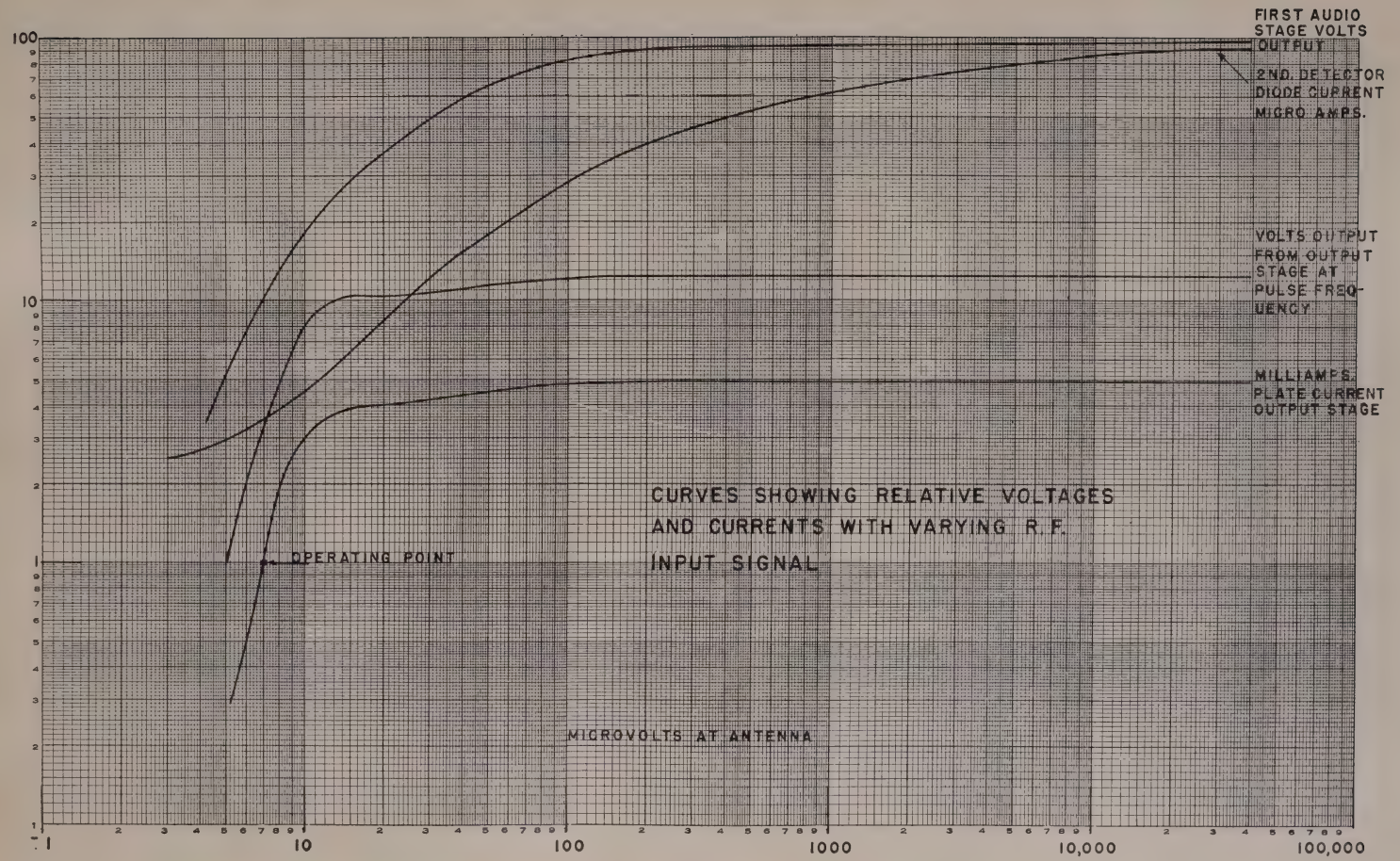
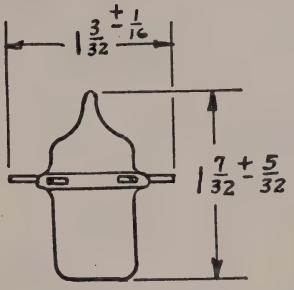


Fig. 12A, Performance Curves, Modified Receiver.

TUBE CHARACTERISTICS — Type 958-A
(ACORN TYPE)

Physical Characteristics

Bottom View



Short Part of Bulb: Bottom

RATINGS AND CHARACTERISTICS

Filament:

Voltage	1.25 V.D.C.
Current	.10 amps

Direct Interlectrode Capacitances:

Grid to Plate	2.6 uuf
Grid to Filament	0.6 uuf
Plate to Filament	0.8 uuf

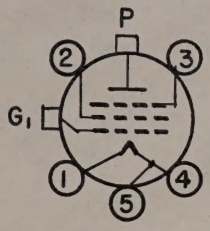
Typical Operating Conditions and Characteristics:

Plate Voltage	135 max. V.D.C.
Grid Voltage	—30 max. V.D.C.
Plate Current	7 max. ma. D.C.
Grid Current	1 max. ma. D.C.
Plate Input	950 max. mw
Plate Dissipation	600 max. mw

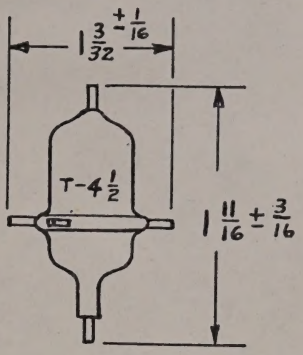
Fig. 13A, Tube Characteristics, 958-A

TUBE CHARACTERISTICS — TYPE 959
(ACORN TYPE)

Physical Characteristics



Bottom View



P is on Long Part of Bulb: Top
G1 is on Short Part of Bulb: Bottom

RATINGS AND CHARACTERISTICS

Filament:

Voltages	1.25	V.D.C.
Current	.05	amps

Direct Interelectrode Capacitances:

Grid to Plate	.015	max. uuf
Input	1.8	uuf
Output	2.5	uuf

Typical Operating Conditions and Characteristics:

Plate Voltage	145	max. V.D.C.
Screen (Grid #2) Voltage	67.5	max. V.D.C.

Class A1 Amplifier

Plate Voltage	135	V.D.C.
Screen Voltage	67.5	V.D.C.
Grid Voltage (G1)	—3	V.D.C.
Plate Resistance	0.8	Approx. megohm
Transcunductance	600	umhos
Plate Current	1.7	ma. D.C.
Screen Current	0.4	ma. D.C.

Fig. 14A, Tube Characteristics, 959